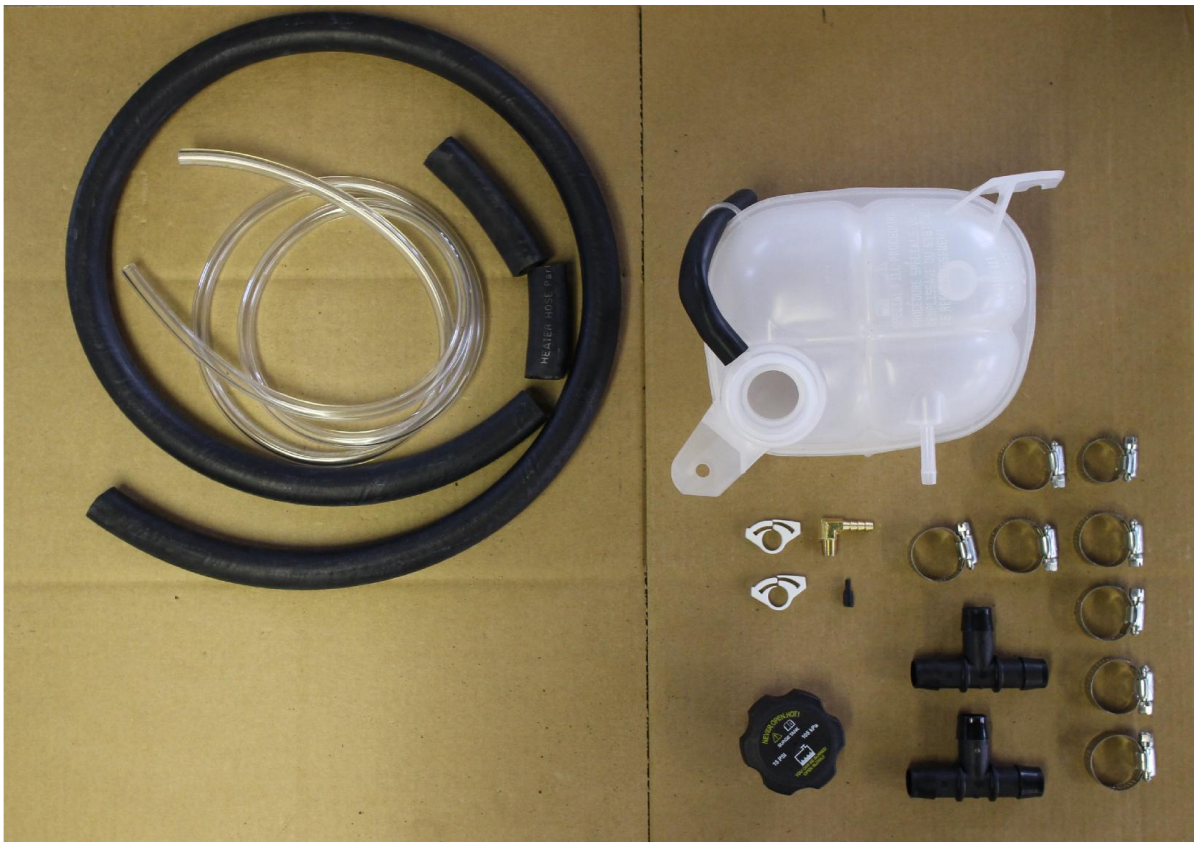
ZZPerformance.com

"Option B" Dual-Pass IC Reservoir upgrade

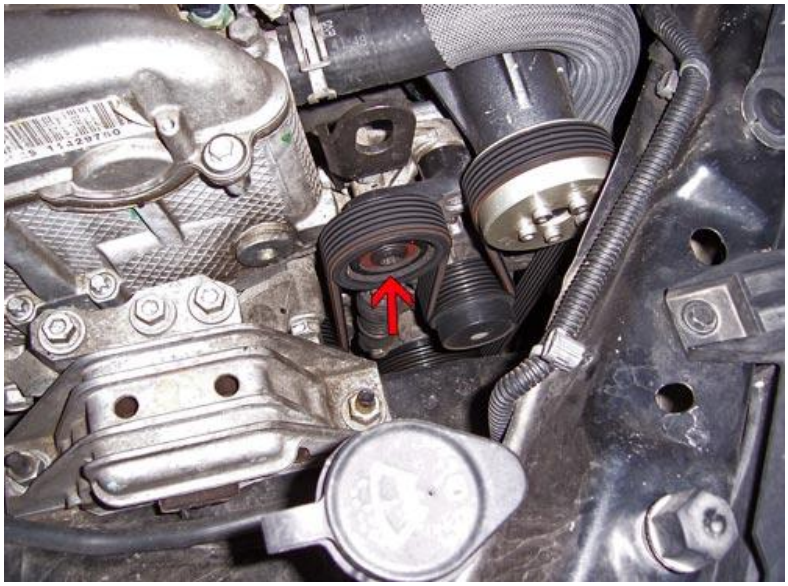


Tools you will need:
Flat head screw driver
Trim removal tool (H.E. install only, not required)
10mm socket
6mm socket
5/8" spark plug socket and 6" extension
Torx T50
Torx T30
Drill Bit (Size "R" or 11/32" ONLY)
1/8"-27 NPT Tap and Tap Handel
Pipe Putty or Teflon Tape
6mm Hex bit socket (ball end preferred)
E7 inverted socket (dual pass install only)
Rubber mallet (dual pass only)

When working on your car it is always a good idea to disconnect your battery. This will prevent bumping certain terminals and wires and blowing fuses or worse.

Step 1 : Removing the supercharger:

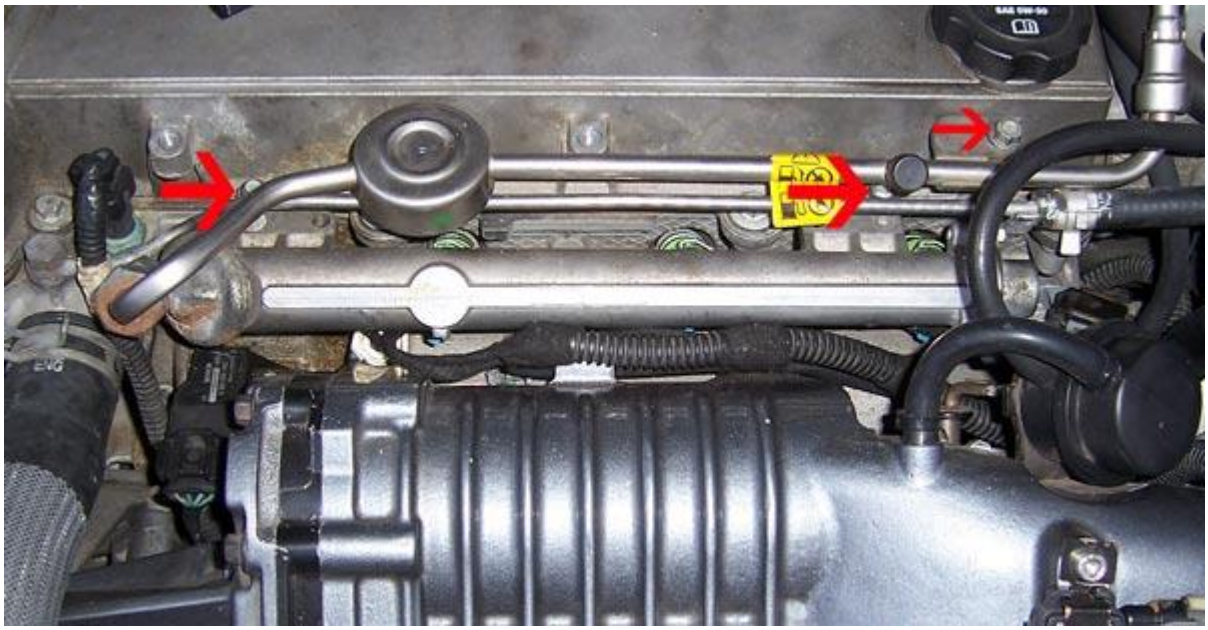
First the supercharger belt must be removed, use a flat headed screw driver to pop the cap off the factory tensioner pulley. Then use a T50 Torx bit and turn counter clock wise until the factory tensioner is maxed out, slide the belt off of one of the pulleys, then release the tensioner slowly.



If your car is equipped with the plastic fuel rail cover, you will need to remove the 2 T30 bolts and it will easily pull off. Now use the 6mm hex to remove the (4) supercharger bolts. A ball style hex bit socket would work the best. Unplug/remove the following: Brake booster line(pull up on the white clip, then it will slide right off), SC inlet pressure sensor, lower boost bypass vacuum line, intake tube from throttlebody, throttlebody plug, EVAP plastic line, and the T fill((2) 10mm bolts on the inlet of the blower). Remove the blower by tilting and turning it to get it out from under the radiator hose. Now swap the SC pulley using a press or supercharger (specific) pulley puller that will support the entire side of the pulley, a 3 or 4 jaw puller will NOT WORK, it will damage the pulley and possibly even the SC shaft. Then reinstall the ZZP modular hub so that the largest OD is outward and perfectly flush with the end of the snout shaft and press in the Christmas tree plug in the end of the snout shaft.

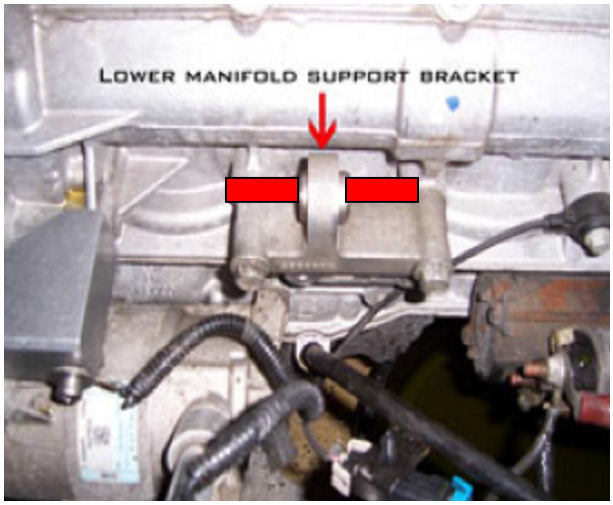
Step 2: Removing the fuel Rail

This will require a 10mm socket to remove the (2) fuel rail bolts and the single bolt for the fuel rail feed line. The coolant line will not need to me disconnected from the head, this will avoid the chance of losing the coolant copper sealing washers and/or stripping the threads in the head for the banjo bolt. Remove the fuel rail by tilting/twisting/wiggling out from under the coolant line. Next remove the (4) injector clips, injectors themselves, and injector cups from the heads. Inspect the injector cup o-rings for damage or excessive wear, and grease up the o-rings on the injector cups and the injectors themselves.



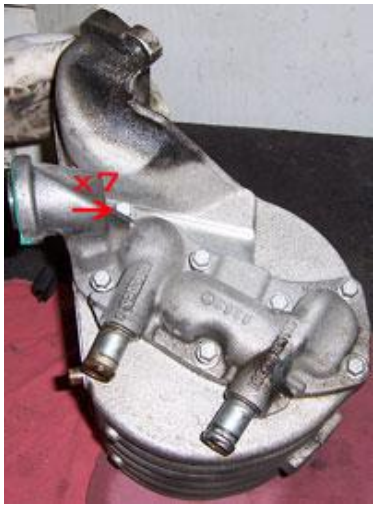
Step 3 : Removing the lower intake to install the dual pass endplate:

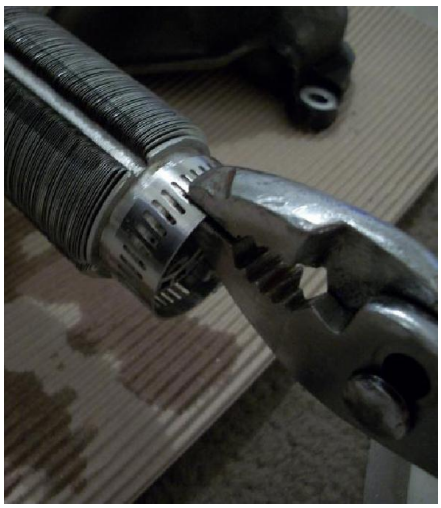
Now that you can access the bottom of the lower intake, remove the 1 horizontal lower manifold bolt at the very bottom of the S/C. Using a 15mm socket with a 3" extension or a 15mm deep well socket. Image below shows the manifold (Left) and the Bracket with bolt (red line) you are removing show on the right .



Now it is time to remove the 5 intake bolts, and 2 nuts using a 10mm socket. It makes it a lot easier to remove the intake by also removing the studs using an E7 socket. Then remove the 10mm bolt that holds the dipstick onto the lower intake. Unplug the MAP sensor and drain the coolant from the IC system by disconnecting the hoses from the factory endplate. Make sure to have a drain pan under the car, this can be messy. Disconnect both IC hoses, and remove intake from engine bay.

The next step is to remove the factory endplate; this will require a 10mm socket to remove the (7) bolts, and a rubber mallet or flat screw driver to carefully pry the endplate off. Be careful to not lose or damage the washers, o-rings, or the green rubber o-ring for the actual endplate.

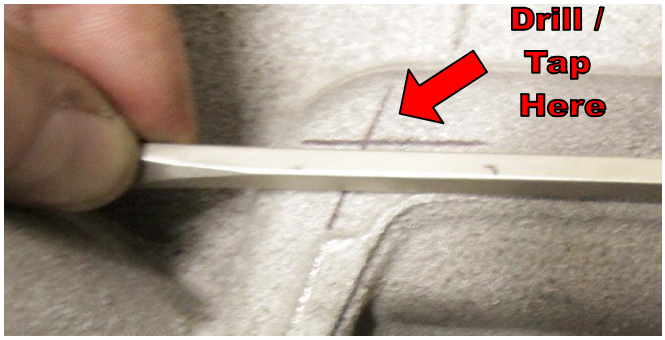




NOTE: Never grip the end of the Laminova core with a hard faced tool. This can cause permanent damage to the tube, and may lead to leaks and replacement. Remove all the Cores, and Cores in a careful manor. A cool trick is to use a hose clamp tightened on the core, so you don't have to touch the core with tools. Inspect the Orings and cores for damage

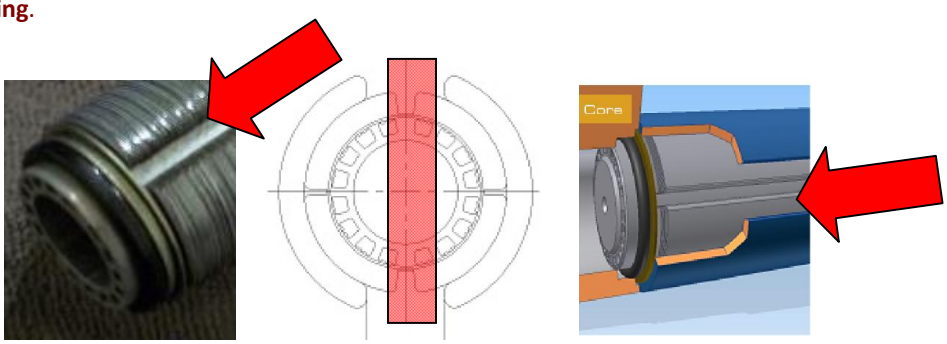
Step 4 : High Pressure bleed line - Modifying the Manifold

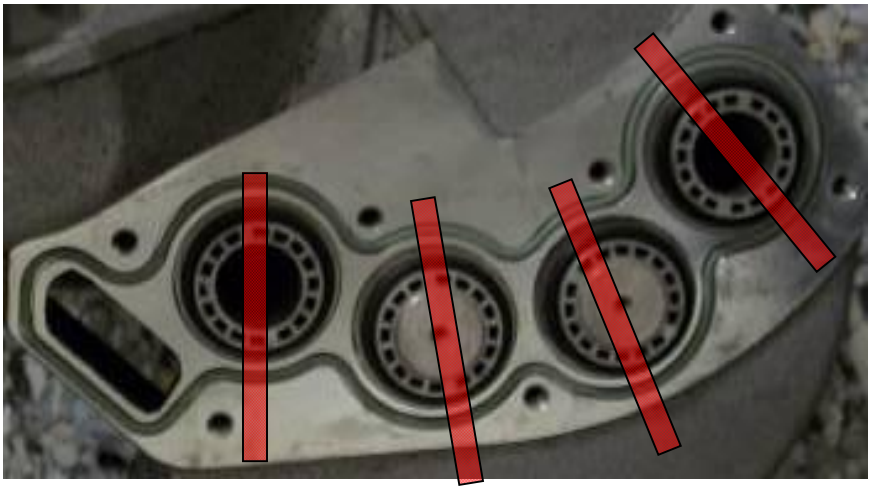
There are 2 ways to perform the next step. GM recommends removing the bleeder in the top of the Stock Heat Exchange (shown on the last page of this document). ZZP has proven the best way to completely remove the trapped air is to Drill / Tap / Install a bleeder port into the side of the manifold. Note: you will still have to properly bleed the stock Heat Exchange. To do this, make sure all your Laminova cores are removed, Use the casting to be a guide for your line, then mark the manifold as shown below. Make sure you do this properly, use Teflon Sealing Tape or Plumbers Putty. **MAKE SURE THE BARB POINTS UP** TO TOP OF MANIFOLD so air and coolant get out. Seek experienced help if needed. Next, Install the Hose and a clamp onto the barb fitting.



Step 5 : Reinstall the Laminova cores

Make sure you properly "clock" the alignment of the cores. There are 2 large grooves and 2 small grooves in the length of the cores. When you insert the cores, the wider grove must be in the center of the manifold opening. Place the will have 2 washers (1 thin, 1 thick) and 1 rubber o-ring on EACH end. When you install any kind of o-ring, lubricant is required to help avoid damaging it and it also helps it seal better. Verify the Cores are seated well, and "Clocked" correctly as shown below, **make sure that each end has both washers and 1 o-ring**.



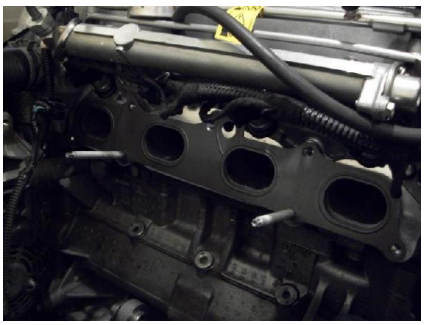


Step 6 : Reinstall the Dual-Pass Plate

Take care with the green end plate o-ring. Make sure to press it back into the o-ring provision groove on the side of the intake. Next tap the Dual-Pass endplate back onto the intake using the rubber mallet. Then reinstall the 7 endplate bolts. Reinstall the lower intake manifold with Dual-Pass plate and Reinstall the alternator.

NOTE: Make sure to test your IC pump to make sure it works AND to make sure that it is wired correctly because this will be the best time to. The pump has a + and – cast into it right by the plug. Use a multimeter to check the polarity, GM screwed up a bunch of the LSJ cars this way. The pump is designed to only flow ONE way. And these pumps fail often, most by 60-70k miles.

Place a light dab of red loctite onto the threaded end of the two (2) intake manifold studs. Install the two (2) intake manifold studs (start by hand). Carefully torque the two (2) intake manifold studs to 44 in-lbs. Install intake manifold gasket. NOTE: You can re-use your original intake manifold gasket if it looks to be in good shape/not damaged. ZZP recommends you inspect it, and use brand new gaskets as needed. Continue to install manifold in reverse order as step 3 above.



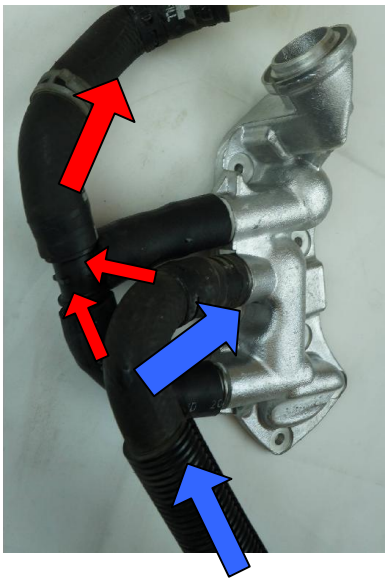
Step 5: ReInstalling the fuel Rail :

Reverse of Step 2; First reinstall the injector cups in the head, then install the new or cleaned fuel injectors in the fuel rail, reinstall injector clips, and finally reinstall the fuel rail. Reinstall the 3 bolts for the fuel rail.

Step 6 : Dual Pass Hoses:

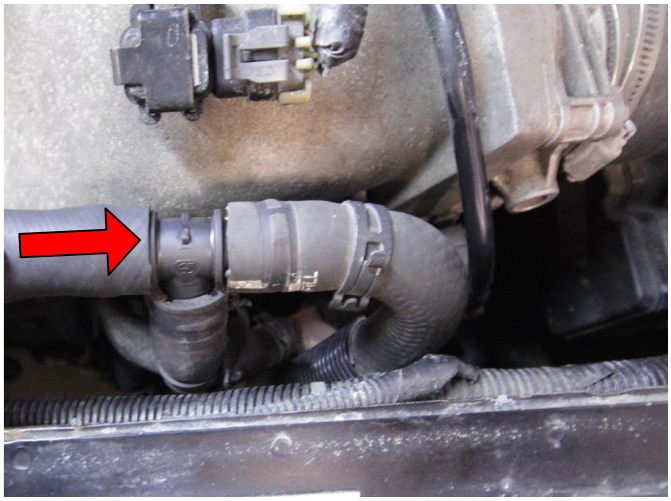
Now that you have 2 hoses and 3 fittings you will need to modify your factory IC hoses. Remove the old upper IC hose from coolant filler "sight glass" and attach it to the middle fitting on the dual pass endplate, no modifications are needed. **Make sure to use hose clamps for every connection moving forward (clamps not shown below)** Now take the old lower IC hose and cut it (about 4.25") so that when you attach one of the plastic Ts included in the Dual pass install kit, it is a straight shot to the UPPER dual pass fitting. Now that you have a piece of IC hose left you will cut that to length (about 3.5") so that it attaches to the top fitting of the dual pass and the other end perfectly connects to the T that you just added, see pic below. (pics below is of the removed from the engine so it is easier to see the IC hoses) **Make sure to use hose clamps for every connection (clamps not shown below)**. Ziptie to secure the T-Fitting to the bracket that was from the "sight glass" filler.

Into "T" and up from the Surge Tank

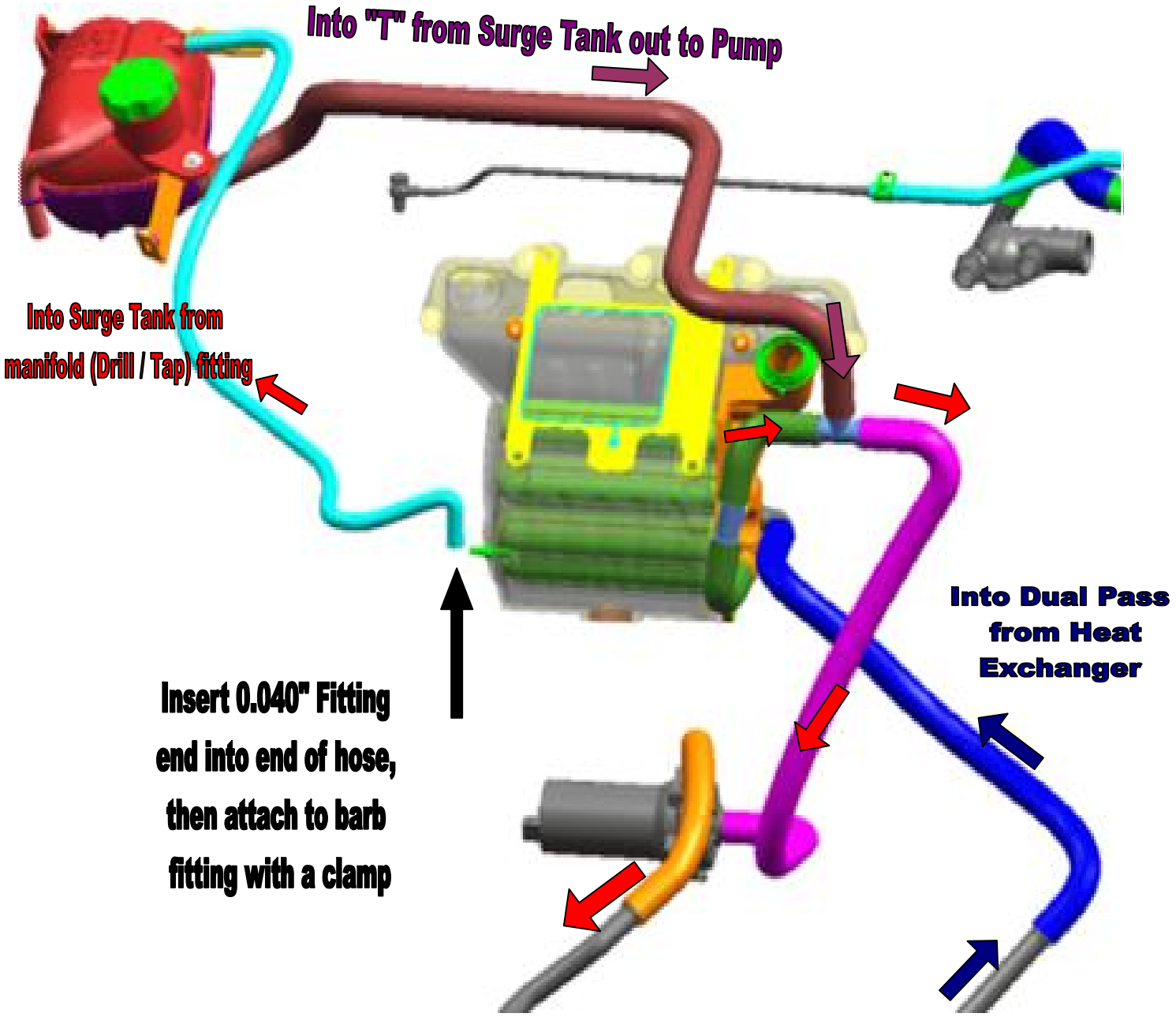


Cold side in from Heat Exchanger

Into "T" and up from the Surge Tank



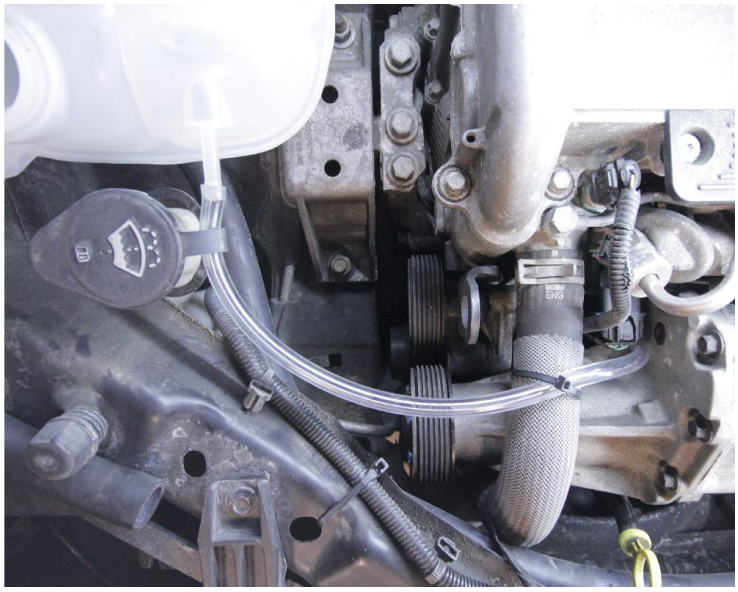
Note all the hoses and routing below. The direction of the water flows from the pump to the I.C. manifold and H.E. **does matter**, and it is **very critical when you add the Option B kit.** You but you must make sure pump works in the proper direction (Into the center and out the side).

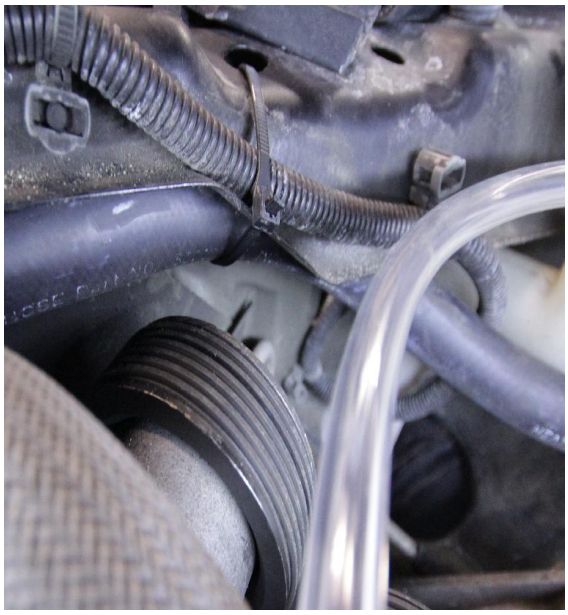

Into "T" from Surge Tank out to Pump
Into Surge Tank from manifold (Drill / Tap) fitting
Into Dual Pass from Heat Exchanger
Insert 0.040" Fitting end into end of hose, then attach to barb fitting with a clamp

Step 7 : Surge tank and hoses

Attach the bracket Item #: ZZ-OPTBBRKT (Cobalt only - Sold seperatly) to the Surge tank. There is a Bolt and nut that gets installed on the tank tab, and a bolt with self-tapping threads that gets screwed to the bottom of the tank. Next install the tank and bracket to the car with M6 Nylock nuts as shown below.

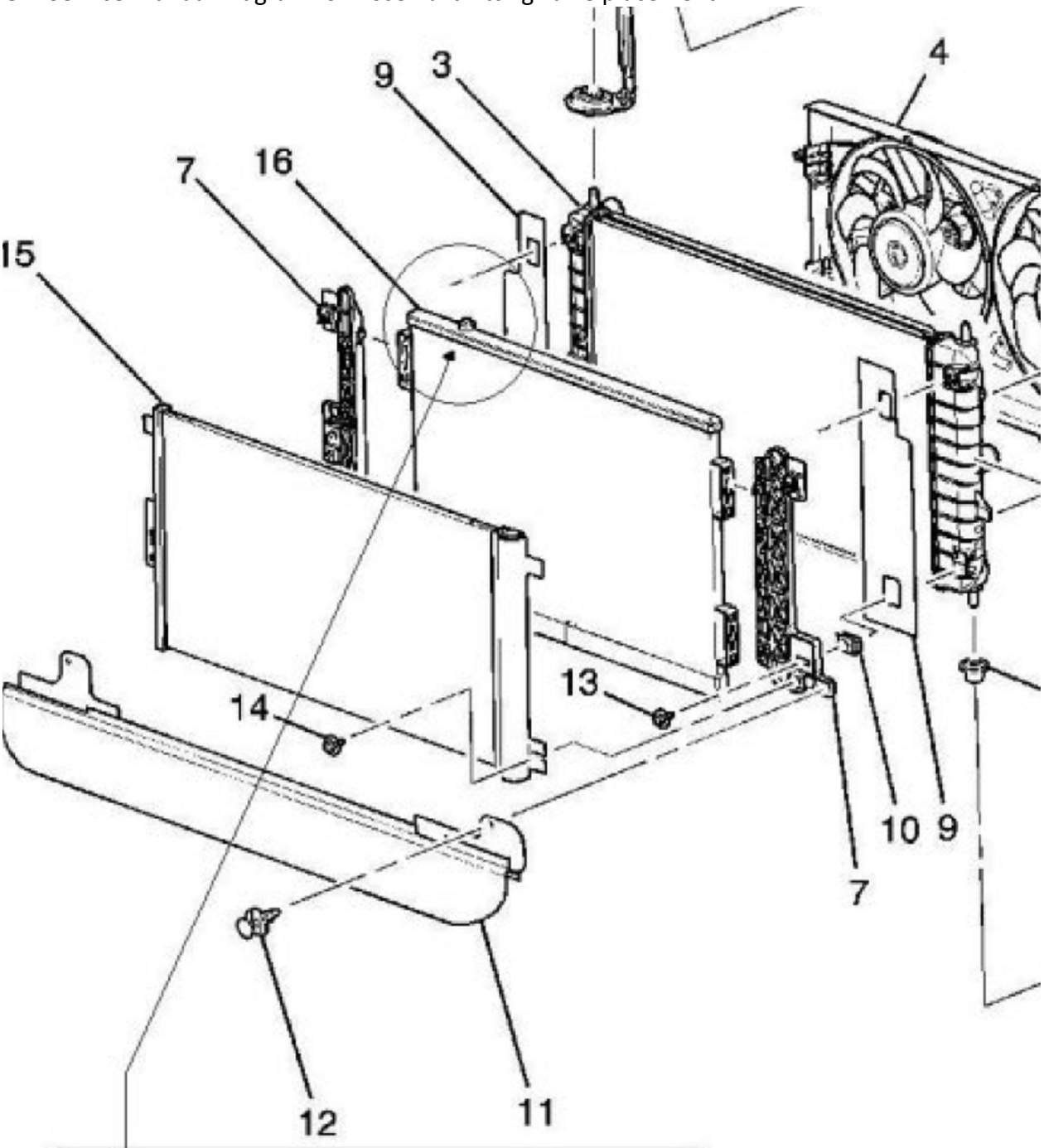
Route the small clear hose from the barb on the manifold as shown below (or the Stock Heat Exchange location) large tank hose under the radiator core support behind the headlight, and secure with zip-ties to the body. Make sure it does not rub on the S/C pulley or any sharp metal edges. Make sure no kinks are in hose. Note: The small hose is routed into the washer bottle cap loop.





Make sure to use hose clamps for every connection. Tighten all clamps, all Hardware, and reinstall all components. This should complete the install of the Dual-Pass Kit. Thanks for your continued support and enjoy your ZZPerformance power enhancements!

GM Service Manual Diagram for Hose Barb fitting valve placement.



-- Brass barbed fitting will be screwed into top of intercooler. Route the 1/4 inch hose behind headlamp, this usually the easiest and cleanest way.

-- Slide the air bleed fitting into hose before clamping on the brass fitting.